REMARKS

Claims 1-11 were previously canceled while claims 31-55, 72-79 and 81-86 were previously withdrawn from consideration. By this amendment, claims 31-36, 55, 72-79 and 81-86 are canceled and new claims 91-110 are added. Therefore, claims 12-30, 56-71, 80 and 87-110 are currently at issue.

This amendment is timely filed with a certificate of mailing under 37 C.F.R. §1.8, a petition for a one-month extension of time, and a check for $910.00 for the required petition fee under 37 C.F.R. §1.17(a)(1) and for the required filing fee for a request for continued examination. Furthermore, by this amendment, one independent claim (claim 31) and 19 dependent claims (claims 32-36, 55, 73-79 and 81-86) are canceled, while one independent claim (claim 91) and 19 dependent claims are added (claims 92-110), and therefore, no additional claim fees are believed to be due. Nothwithstanding, the Commissioner is hereby authorized to charge any fees necessary to maintain the pendancy of this case or to credit any overpayments to Deposit Account No. 13-2855 of Marshall, Gerstein & Borun LLP.

Independent claim 12 is amended to recite an input/output (I/O) device for use in a process control system for providing communications between a process controller and a first device, the process control system including a plurality of I/O devices in communication with the process controller using a bus. Claim 12 is also amended to recite a first interface for communicatively linking the I/O device with a process controller via the bus, the first interface adapted to receive signals from the process controller for the first device via the bus, and a second interface for communicatively linking the I/O device with the first device apart from the bus. Dependant claims 13, 17, 18, 21, 22, and 23 are amended to correspond with independent base claim 12.

Similarly, claim 56 is amended to recite a method for severing communication between an input/output (I/O) device and a bus in a process control system including a plurality of I/O devices communicatively linked with a process controller using the bus. Claim 56 is also amended to recite providing a first interface for communicatively linking the I/O device with a process controller via the bus, the first interface adapted to receive signals from the process controller for a first device via the bus and providing a second interface for communicatively linking the I/O device with the first device apart from the bus. Dependent claims 57, 58, 59, 60, 61, and 62 are amended to correspond with independent base claim 56.

Claim 80 is amended to recite an apparatus having an interface for communicatively linking the apparatus with a process controller via a bus, the first interface adapted to receive signals from the process controller for the first device via the bus.

Applicants submit that these amendments do not add any new matter as these amendments are fully supported at least by Figure 2 and its corresponding description.

Generally, the I/O device recited by claims 12-30, 56-71, 80, and 87-90 can be one of several I/O devices communicatively linked to a process controller via a bus. The I/O device also connects to one or more devices, such as field devices, using a communication link apart from the bus. Thus, the claimed I/O device, in one embodiment, couples signals from one or more field devices to the process controller via that bus and, depending on implementation, may act as a switch for signals to the field devices from the process controller via the bus. However, upon detection of an error within the I/O device, the I/O device can sever its communication link with the bus. As discussed in the specification, this feature provides a failsafe to ensure that a single malfunctioning I/O device does not negatively impact the communications between the process controller and other I/O devices on the bus. Severing the connection to the bus between the process controller and the I/O devices also allows a malfunction to be quickly isolated, unlike existing systems that may require a process controller to first determine, via communications over the bus, whether an I/O device is functioning properly and then transmit shut down instructions, via communications over the bus, to the I/O device. Thus, the claimed device and system provides a faster error detection process and a more responsive isolation mechanism.

Applicants respectfully traverse the rejection of claims 12-30, 56-71, 80, and 87-90 as anticipated by Safadi (U.S. Patent No. 5,379,278) and respectfully traverse the rejections of claims 14-17, 21-27, 29-30, 58-61, 66-71 and 87-90 as obvious over Safadi in view of one or more of Yap (U.S. Patent No. 6,073,193), Lee et al. (U.S. Patent No. 6,615,301), what the examiner has referred to as the Applicants Admitted Prior Art (AAPA), and Kato et al. (U.S. Patent No. 6,397,277), collectively referred to as the cited art. Reconsideration and withdrawal of these rejections is respectfully requested.

Each of claims 12-30, 56-71, 80, and 87-90 recites an input/output (I/O) device that receives signals from a process controller for a first device via a bus using a first interface and that communicates with the first device apart from the bus using a second interface, where the I/O device severs the link to the bus upon detection of a fault. None of the cited art

discloses or teaches an I/O device that receives signals from a process controller for a first device via a bus that communicates with the first device apart from the bus, and that severs a coupling to the bus upon detection of a fault. Therefore, none of the cited art can anticipate any of the claims at issue.

While Safadi discloses a process controller that is capable of disconnecting from a redundant communication line, Safadi fails to disclose the claimed I/O device. In particular, even if the process controller of Safadi is considered to be the claimed I/O device, the Safadi process controller still fails to provide a first interface for receiving signals from another process controller for a first device via a bus from which the process controller disconnects. Specifically, Safadi does not disclose that its redundant controller (which the Examiner has analogized to the claimed I/O device), communicates any signals from another process controller to a first device. In fact, the only disclosed communication between Safadi's primary controller and secondary controller involves maintaining a database between a primary and secondary controller via a link 13 (see Col. 3, lines 16-18). However, Safadi does not indicate, in any manner, that process control signals, or any other signals, are sent through any single redundant controller (i.e., controller 30 or 40) to a first device via another redundant controller, much less via the bus from which the redundant controller disconnects. Specifically, Safadi indicates that only one of its redundant controllers provides control functionality at any one time while the other controller is offline. Thus, Safadi fails to disclose that a first controller could control or should control another device through its secondary controller, nor would it make sense to do so in the Safadi system. In short, even if the Safadi controller is considered to be an I/O device, it is not an I/O device that communicates signals between a process controller and a first device via a bus from which this I/O device disconnects (i.e., the line 14 of Safadi). It follows, therefore, that Safadi cannot anticipate any of the claims at issue.

Furthermore, no combination of Safadi with Yap, Lee et al., the AAPA and Kato et al. can render any of the claims at issue obvious because none of Yap, Lee et al., the AAPA or Kato provides the disclosure missing in Safadi, nor has the Examiner cited them for this purpose. In particular, while each of Yap, Lee et al. and Kato et al. are generally directed to computer related communication devices, these documents do not disclose a process control system, much less the use of I/O devices or field devices within a process control system. Still further, it does not appear that any of these documents discloses the severing of a

communication connection based on the detection of a device fault within any type of device, much less a process control device such as an I/O device or a field device. As a result, none of Yap, Lee et al. or Kato et al. provides any disclosure or suggestion of an I/O device that severs its connection with a bus upon the detection of a device fault. Likewise, the AAPA, which merely discusses one possible effect of an I/O device undergoing a failure on a bus, does not provide this disclosure.

Still further, none of the cited art provides a motivation to modify any of their teachings to provide an I/O device for coupling one or more devices to a process controller via a bus that severs a connection between the I/O device and the bus upon detection of a fault in the I/O device. Safadi does not even recognize the problem with malfunctioning I/O devices because it is not concerned with an I/O device as setup in the claimed configuration. Specifically, Safadi discloses operation of a redundant process controller in which one controller must be disconnected while a second controller is activated. Thus, Safadi is primarily concerned with faults originating within a process controller, not from an I/O device that may interfere with the communications of other devices, including a process controller, on a bus. The Safadi disclosure is completely directed to the situation which arises when redundant controllers are connected to redundant buses, which gives rise to a "jabber" condition in the controller when both busses experience problems. (See, Safadi, Col. 4, lines 14-43). The claimed device and method, on the other hand, is for example used to prevent a faulty I/O device from interfering with the communications of other such devices on the bus. Safadi does not recognize this problem, much less provide any suggestion or motivation for correcting this problem.

It is clear that the prior art must make a suggestion of or provide an incentive for a claimed combination of elements to establish a *prima facie* case of obviousness. *See, In re Oetiker*, 24 U.S.P.Q.2d 1443, 1446 (Fed. Cir. 1992); *Ex parte Clapp*, 227 U.S.P.Q. 972, 973 (Bd. Pat. App. 1985). This principle holds true even if the applied art could be modified to produce the invention recited by the pending claims. *See, In re Mills,* 16 U.S.P.Q.2d 1430, 1432 (Fed. Cir. 1990); *In re Gordon,* 221 U.S.P.Q. 1125, 1127 (Fed. Cir. 1984) ("The mere fact that the prior art could be so modified would not have made the modification obvious unless the prior art suggested the desirability of the modification.") Because each of Safadi, Yap, Lee et al., the AAPA and Kato et al. fails to disclose or provide any motivation for severing a communication connection between an I/O device and the bus to which it is

connected within a process control system, it follows that no combination of these documents can render any of the claims 12-30, 56-71, 80 and 87-90 obvious.

New claim 91 and claims 92-110 depending therefrom recite a process control system comprising a bus, a process controller communicatively coupled to the bus, a plurality of I/O devices coupled to the bus for providing communications between the process controller and a plurality of first devices, and a device processor within each I/O device that severs a communication link of the I/O device with the bus upon detection of a potential I/O device fault in the I/O device. While Safadi discloses a pair of redundant process controllers connected to a plurality of I/O modules, neither one of the redundant controllers nor any one of the I/O modules communicates with a process controller via a bus to provide communications between the process controller and a first device while being able to disconnect from the same bus upon detection of a potential device fault. Safadi only discloses two process controllers. Thus, even if one of the redundant controllers 30, 40 of Safadi could provide communications between the other redundant controller and a first device via a bus and disconnect from that bus upon detection of a fault, Safadi still fails to disclose more than one device capable of doing this because one of the two redundant controllers must function as the claimed process controller while the other functions as an I/O device. Thus, the Safadi controllers are not a plurality of I/O devices, as recited by the pending claims. Furthermore, while the I/O modules of Safadi may communicate signals from one of the process controllers 30, 40 to a first device, Safadi fails to teach or suggest that any of its I/O modules can disconnect from a bus connecting an I/O module to a process controller upon detection of a fault in the I/O module.

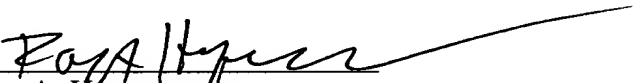
Likewise, none of Yap, Lee et al., the AAPA or Kato et al. discloses, in any manner, an I/O device coupled to a bus for providing communications between a process controller and a plurality of first devices, much less a plurality of I/O devices that provide communications between a process controller and a plurality of first devices where each I/O device is capable of severing a communication link between an I/O device with the bus upon detection of a potential I/O device fault. It follows, therefore, that none of the cited art can anticipate any of new claims 91-110 or render any of new claims 91-110 obvious. Applicants therefore submit that claims 91-110 are allowable.

CONCLUSION

For the foregoing reasons, Applicants respectfully request reconsideration and withdrawal of the rejections and allowance of claims 12-30, 56-71, 80 and 87-110. If there are matters that can be discussed by telephone to further the prosecution of this application, Applicants respectfully request that the Examiner call its attorney at the number listed below.

Respectfully submitted,

Dated: December 19, 2005

By 

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